

**An Exploratory Analysis of Residential  
Electricity Conservation Survey and  
Billing Data: Southern California Edison,  
Summer 2001**

**CONSULTANT REPORT**

MAY 2002  
400-02-006F



Gray Davis, Governor

# CALIFORNIA ENERGY COMMISSION

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December 6, 2001

Revised  
March 1, 2002

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## **EXECUTIVE SUMMARY:**

### **Report Plan and Summary of Findings**

#### ***Purpose of the Report***

Based primarily on 590 in-depth telephone interviews with residential customers in Southern California Edison territory in late summer coupled with their 1999-2001 billing information, this report presents preliminary results on household conservation responses to the energy conditions of 2001. Interviews with 1272 additional households in PG&E, SDG&E, LADWP and SMUD service territories will be analyzed similarly when billing information is received. A few comparative results are presented here on types of conservation actions.

#### ***The Exploratory Phase***

The study is in an exploratory phase, in which broad patterns of consumer response are mapped and questions regarding differences in response among subgroups of respondents are posed. The exploratory work has included: (1) examination of frequency distributions on attitude, behavior, socio-demographic characteristics, and housing/technology variables, (2) correlation and crosstabulation studies of simple bivariate relationships between variables, (3) the combination and reconstruction of variables, and (4) simple multi-variate modeling using log-linear, logit and ordinary least squares approaches.

#### ***Current Status of Data Collection and Analysis***

Completed interviews number 1862 distributed as follows across the utility territories:

SCE	590
PG&E	400
SDG&E	412
LADWP	244
SMUD	216

Household monthly billing information for 1999-2001 has been received from SCE and is expected for the other utilities. Supplementary data such as weather data, price changes, blackout exposure and media exposure are in various stages of completeness for the different utilities at this point.

#### ***Sample Bias Issues***

Compared to known population parameters, the SCE respondent sample over-represents single family detached dwellings. As a result, homeowners, older households, those with higher incomes, and whites and Hispanics are likely over-represented. Subsequent analysis will develop and test weighting schemes to adjust for this. This is not an issue for the regression analysis as sufficient numbers of under-represented cases are represented in the sample.

#### ***What Happened During June 2001***

One of the major aims of this research is to investigate and explain levels of consumption and changes in consumption between 2000 and 2001. To begin, 696 cases with full billing

periods for June 2000 and June 2001 were drawn from 5,000 residential customer cases supplied by SCE. A relatively small minority of the population (30 percent), which had the highest average rates of consumption in the previous year, reduced their total monthly energy use by about 37 percent. This group accounts for 75 percent of the total residential kWh savings in that month. Another 21 percent of the SCE households fell into the 10-20 percent reduction category, averaging a 15 percent change.

These June effects, at the peak of the crisis and prior to any price increases, show a fairly dramatic conservation response—but only in a minority of the population. Another 35 percent actually increased their consumption over the previous June. Analyses of this question will continue as billing data is received from the other utilities and later into the summer for SCE.

### ***General Attitudes and Concerns***

In the SCE survey results, a vast majority of the sample reported concerns about the energy situation and expressed a willingness to act to reduce their own consumption. Those who told us they had made no changes most frequently thought their energy use was already low. Only a very small group answered that they were not aware of how to make changes to reduce the ways they used energy.

Respondents were given a fairly wide array of motivation choices ranging from self-interest to civic contribution. Most respondents actually simultaneously held many of these views. There are interesting variations in strength of motivation, but all are fairly uniformly widely held. None of the analyses yielded significant relationships between motivation and conserver status or common socio-demographic distinctions. Overall, respondents rated keeping bills down, avoiding blackouts, use energy wisely and stopping overcharging by suppliers as most important. Qualifying for a utility rebate, protecting the environment and seeing how low the bill could go were ranked as less important motivations.

### ***Reported Conservation Action***

Open-ended responses were individually recorded and categorized into nearly 100 conservation behaviors from the 82 percent of households that reported changes in energy-using practices. Respondents could identify 4 actions per household on average.

For purposes of the present analysis, the 100 behaviors were collapsed into 11 categories and graphed in the first histogram for SCE customers. Nearly all reporting households (including non-conserving households) report turning off indoor and outdoor lights. A small proportion report setting their cooling thermostats to 78 degrees or higher. The smallest proportions reported making investments in building, appliances or building systems, although, taken together these hardware installations were not trivial. A second histogram compares the SCE actions with those of other utility customers. While appearing similar upon visual inspection, some notably stronger efforts can be observed across the service areas. Further analysis is needed.

### ***Segmentation of Conserver Action***

A series of multiple response crosstabs compared segmentation variables (e.g., conserver types, socio-demographic types) with conservation behavior variables. Although certain groups seemed to be more strongly associated with particular behaviors, no significant differences were found.

Next each of the 11 conservation action variables were regressed as the dependent variable against an array of socio-demographic predictors as the independent variables. These predictor variables include education, income, race/ethnicity, age, household composition, dwelling type, ownership, and square footage. Significant relationships between the action variables of turning off or using fewer lights, turning off equipment when not in use, using air conditioning less or not at all, off-peak usage, using CFLs or low-watt bulbs, low-cost efficiency investments (service equipment, add timers, etc.) and major efficiency investments (added insulation, whole house fan, etc.) and certain socio-economic predictors.

Ethnicity: African Americans are more likely than whites to report turning off their lights and televisions. Hispanic households, when compared to white households, are more likely to report shifting electricity use to off-peak hours. Asians/Others, however, are even less likely than whites to use energy during off-peak hours. Hispanics also are more likely to have reported major efficiency investments than did whites.

Age: As age increases, respondents are significantly less likely to try to shift electricity use to off-peak hours or to make low-cost home improvements. Since the effects of income and home ownership were controlled in the models, significantly lower reported levels of low-cost improvements in higher age groups cannot be explained by those variables. However, older persons may also have already made many of these low-cost improvements.

Household composition: Couples without children are less likely than couples with children to report turning off lights. Single parents are more likely to turn off equipment than couples with kids, even controlling for income. Both singles and couples *without* kids are less likely to turn off or use less air conditioning than couples *with* kids.

Dwelling type: Those residing in mobile homes are more likely to not use or to turn off the air conditioning than those living in single family residences. Similarly, they are more likely to use compact fluorescent or other energy saving bulbs, and to do low-cost improvements.

Square footage: As dwelling square footage increases, respondents are more likely to turn off equipment, purchase compact fluorescent or low-energy bulbs, and do low-cost improvements. Income and homeownership were included as control variables. Neither variable was significant in any of the models.

Another approach to segmentation looks for interactions between predictors and conservation behaviors using a significant segments analysis. This analysis reproduced the logit results described above, but also identified several additional consumer segments associated with particular conservation behaviors. Here we find unexpected interactions between ethnicity, household composition and housing type with conservation actions. African-Americans, Hispanics and single parent households are more likely, in single family homes and as homeowners, to have turned off televisions, made peak adjustments and installed CFLs or other low-wattage lighting.

### ***Clusters of Behavior***

Since most consumer households reported more than one conservation behavior, an obvious question is whether certain behaviors cluster or “go with” others. A simple correlation matrix shows that this question is worth pursuing with more complex cluster and principal components analyses in the future.

### ***Likelihood of Continuing Conservation Behaviors***

Self-reported estimations that the conservation actions are likely to continue are above 79 percent for each of the 11 conservation variables. This will be important to check in follow-on research with these respondents.

Respondents were also asked about conservation actions that they were unwilling to take or actions that had proven difficult or inconvenient. The results from these questions reinforce the notion that some level of persistence might be expected. More than half of the respondents reported no serious effect on quality of life. For 14 percent, the behavior changes even seemed to improve their quality of life.

### ***Sources of Influence***

The tabulated results reveal that survey respondents considered their own past experience or common sense to be most influential on their energy conservation and actions. Media-related influences also ranked high, with news stories being reported as more influential than advertisements. The results carry a considerable amount of policy-relevant information that needs to be the object of a larger discussion about how to deploy difference sources of influence, information, etc. in better targeted ways. Exploratory crosstabulations of the influence variables by conserver type and demographic variables found only two significant relationships. The group conserving over 20 percent reported a slightly higher incidence of using utility bill information, and (ironically) consumers whose consumption actually increased by 20 percent or more gave the greatest credit to school education programs.

### ***Other Influences on Consumption and Conservation***

The research gathered data on a number of other factors that might be expected to influence conservation action and consumption levels. SCE consumers showed concern about prices, less than uniform awareness of costs, little experience with blackouts (and little inconvenience if they had experienced one) and relatively little knowledge of or participation in conservation or efficiency programs.



### ***General Policy Perspectives***

Consumers did see a legitimate role for government intervention and programs, however. Specific suggestions received from respondents are still being coded and analyzed. Consumers also indicated that they see “real changes” in lifestyle as necessary for long-term energy security in California.

### ***Future Action Potentials***

Respondents reported a number of additional actions they would take if they could afford to do so. They also reported a variety of appliances and equipment they believed were candidates for future replacements. The top three replacement candidates were refrigerators, central air conditioning and furnaces.

### ***Actual Changes in Consumption***

With the actual consumption (kWh, not kW) data for these 590 SCE households, it is possible to explore the question of which conservation measures have the greatest effect on changes in consumption. A variable for an “amount conserved” between June 2000 and June 2001 was regressed against a set of conservation, socio-economic, building characteristics, climate zone and control variables. In the initial analysis, only two conservation actions turn out to be significant, “unplugging equipment” and “setting thermostat at 78 degrees or above,” both relatively uncommon stated actions. The initial results also indicate some ethnic effects that are impossible to interpret at this point and some fairly clear climate zone effects. The data suggest the possibility of real temperature differences between June 2000 and June 2001 in some portions of the SCE territory.

### ***Next Stages of Analysis***

The next stages will involve a variety of new analyses using the SCE data.

- Examining the effects of clusters of conservation actions
- More sophisticated efforts to differentiate customer groups
- Trying to understand likely persistence in greater detail, as well as cumulative effects of reported actions
- Improving the analysis by incorporating supplemental data on dwelling size, age, etc.
- Look for blackout, price and media effects
- Examine possible geographic clustering and neighborhood lifestyle effects
- Match weather station daily high and low data with billing cycles
- Analyses of the open-ended responses on future plans, views, desires, actions, intentions etc.

With the addition of the billing data from PG&E, SDG&E, SMUD and LADWP, identical of customer response, plus a comparative analysis of conservation action and effect across utilities will be conducted.

# **AN EXPLORATORY ANALYSIS OF RESIDENTIAL ELECTRICITY CONSERVATION SURVEY AND BILLING DATA, SOUTHERN CALIFORNIA EDISON, SUMMER 2001**

## **Introduction: Purpose of the Report**

This report presents the first preliminary results from the CEC study of household conservation response to the complex conditions of Summer 2001 in California. It is based primarily upon data obtained from 590 in-depth telephone interviews conducted with residential energy users in the Southern California Edison (SCE) territory during late August, September and early October of 2001.

A few comparative results obtained from interviews with 1272 household in the other four major utility territories (SMUD, LADWP, PG&E, and SDGE) are also presented in the discussion of behavioral conservation responses only. But because we still lack billing information from those utilities (see discussion of the status of data collection, below) from which we can determine the actual conservation rates in those households, we have chosen not to analyze those self-reports in any detail at this time. We concentrate, instead, on a detailed first-order (exploratory) investigation of the SCE data, including an analysis of actual consumption/conservation effects using data from SCE billing records. This pilot study will provide a template for the preliminary analysis of data from the other utility territories when those data are finally in-hand.

In a series of further reports, a more detailed analysis of the SCE data will be offered, along with analyses of the non-Edison households, and state-wide comparative studies that explore differences in actions, attitudes, plans, and future efficiency potentials in various parts of the state and across different consumer subgroups.

## **The Exploratory Phase**

The first stage in the analysis of data of the volume and complexity of those collected for this study is an *exploratory phase* in which broad patterns of consumer response are mapped and questions regarding differences in response among subgroups of respondents are posed. In this research, our exploratory work has included (1) examination of frequency distributions on attitude, behavior, socio-demographic characteristics, housing/technology variables, (2) correlation and crosstabulation studies of simple bivariate relationships between variables, (3) the combination and reconstruction of variables, and (4) simple multi-variate modeling (in this case using log-linear, logit and ordinary least square approaches).

As noted, more detailed analysis and more sophisticated modeling techniques will be used in subsequent analysis to identify relationships that remain hidden in simpler approaches. However, the intention of this report is to present *what we know now* as a result of our initial examination of patterns of behavior and attitudes found to be large enough to be both statistically significant and of policy interest.

We attempt to do this in as graphic and readily accessible a way as possible. As a result, the following is rich in figures and tables of results, and sparse in description. It is our intention to present results that serves as a *basis for continuing exploration* of the data, raising more questions—some that the data will be able to answer fairly directly and clearly, other (unfortunately) that may defy explanation without further data collection.

### Current Status of Data Collection and Analysis

At the present time, all survey data are in hand and most are in a form in which they can begin to be massaged (recoded, collapsed, new synthetic variables constructed, missing data treated in a variety of ways, climate zones assigned from zip codes and visual inspection of maps, etc., etc.) for analysis. The first table below shows the final number and distribution of completed interviews across the utility territories.

*Table 1. Completed Interviews*

SCE	590
PG&E	400
SDGE	412
LADWP	244
SMUD	<u>216</u>
Total	1862

The second table reports the status of data collection on utility billing data and supplemental data (e.g., data on price changes, blackout exposure, media exposure, data to be acquired to fill in survey gaps on key variables such as dwelling size and type).

*Table 2. Status of Survey Subsamples, Billing Data Acquisition and Supplementary Data by Utility Service Territory*

	SURVEY	BILLING	SUPPLE	EVENTS/PRICES	WEATHER
LA	X	(x)	-	partial	X
SCE	X	X	-	partial	X
PGE	X	(x)	-	partial	X
SMUD	X	(x)	-	partial	X
SDGE	X	(x)	-	partial	X

X – in hand

(x) – on the way?

- = not yet attempted to obtain

### Sample Bias Issues

Comparison of some of the key characteristics of the sample of SCE survey completes with known population parameters shows that the sample over-represents single family detached dwellings. As a result, it also likely over-represents home owners, older households, those with higher incomes, and whites. Subsequent analysis will develop and test weighting schemes to adjust for this bias, where necessary. One plausible effect of this bias on the results reported here might well be *over-reporting* of conservation actions. For many analyses (e.g., the various regression models reported below), these biases are not an issue as long as sufficient numbers of under-represented cases are present in the sample. We are confident that they are in this SCE sample, and our known and suspected biases in the sample are not likely to be large.

### What Happened During June 2001?

In order to investigate levels of consumption and changes in consumption in the population, 696 cases with full billing periods in the months of June 2001 and June 2000 were drawn from the 5000 residential consumer cases provided to us by SCE. Mean consumption values for each period were calculated and compared, and 6 “conservers” and “non-conservers” types were identified. The consumption levels and conservation effects for each of these groups is reported in the table below, where we see that a relatively small minority of the population, which had the highest average rates of consumption in the previous year, reduced their total monthly energy use by about 37%, accounting for a very large proportion (75%) of the total SCE residential kWh savings in that month.

Clearly, a somewhat different picture may emerge in the near future, when we’re able to examine data from the other summer months and to aggregate savings across the entire summer. But these June effects, at the peak of the crisis and prior to any price increases, show what seem to be fairly dramatic conservation response—but only in a minority of the population. About 35% of the population actually *increased* their consumption over the previous year.

*Table 3. Consumption Subgroups and Their Relative Contributions to Demand Reduction*

		% HHs	kWh Jn 2000	kWh Jn 2001	kWh chng	% chng	% of SCE residential savings
Consumer Subgroups							
20%+	increase	16%	500	731	231	46%	
10-20%	increase	7%	568	649	81	14%	
0-10%	increase	11%	564	586	22	4%	
0-10%	decrease	16%	529	499	-30	-6%	4%
10-20%	decrease	21%	744	629	-115	-15%	17%
20%+	decrease	30%	763	478	-285	-37%	75%

### General Attitudes and Concerns

We find from our survey results, however, that a vast majority of the sample reported concerns about the energy situation and expressed a willingness to act to reduce their own consumption. The following tables present results on SCE consumers' views of the seriousness of the situation and how they were responding to it.

*Table 4. Overall Concern*

#### *DEGREE OF CONCERN ABOUT ENERGY PROBLEMS*

"Since the beginning of this year, how much have you been thinking about the effects of the energy situation on you, your family or friends?"

	<i>Frequency</i>	<i>Percent</i>
A LOT	324	55.4
SOME	177	30.3
A LITTLE	65	11.1
<u>NOT AT ALL</u>	<u>19</u>	<u>3.2</u>
Total	585	100.0

#### *CHANGES IN ENERGY USE*

"Have you made any changes over the past year in the ways that you use energy?"

	<i>Frequency</i>	<i>Percent</i>
Yes	483	82.4
<u>No</u>	<u>103</u>	<u>17.6</u>
Total	586	100.0

#### *WHY SOME PEOPLE HAVEN'T MADE ANY CHANGES*

"Which of the following BEST describes why you haven't made any changes?"

	<i>Frequency</i>	<i>Percent</i>
NOT AWARE OF HOW	6	6.0
DON'T SEE A REASON	12	12.0
ENERGY USE ALREADY LOW	62	62.0
<u>OTHER REASON</u>	<u>18</u>	<u>18.0</u>
Total	100	100.0

### Motivations (and differences among consumers)

The following tables present data on particular *motivations* held by consumers that have stimulated and supported their conservation efforts. Persons were given a fairly wide array of choices (from self-interest to civic contribution), and most respondents actually *simultaneously held* many of these views.

In order to try to determine whether any particular views were more widely held, or held to a stronger degree, in particular consumer subgroups, crosstabulations were performed of all of the motivation variables with the 6 conserver/non-conserver type variable, as well as with income, ethnicity, household composition (singles vs. couples, children vs. no children), and single family vs. multi-family dwelling. *NONE* of these analyses yielded significant relationships between motivation and conserver status or common socio-demographic distinctions.

The conclusion is that there are interesting variations in strength of motivation, but that all were widely held, and fairly uniformly across social groups.

Table 5. *Motivations To Conserve: How Important to Consumers are Self-Interest, Altruism, Etc.?*

		Very Important	Somewhat Important	Somewhat Unimportant	Very Unimportant
To keep your electricity bills down	N	419	96	12	1
	%	79.4	18.2	2.3	0.2
To qualify for a utility rebate	N	187	178	94	51
	%	36.7	34.9	18.4	10
To do your part to help Californians through a difficult time	N	364	112	22	24
	%	69.7	21.5	4.2	4.6
To try to avoid blackouts	N	414	73	22	17
	%	78.7	13.9	4.2	3.2
To use energy resources as wisely as possible	N	402	103	9	5
	%	77.5	19.8	1.7	1
To protect the environment	N	344	123	30	22
	%	66.3	23.7	5.8	4.2
To stop energy suppliers from overcharging	N	401	60	22	24
	%	79.1	11.8	4.3	4.7
To see how low you could get your energy bill	N	262	165	75	24
	%	49.8	31.4	14.3	4.6

### Reported Conservation Action

Self-reports of conservation actions were collected from the 82% of the sample who reported that their energy-using practices had changed as a result of the Summer 2001 energy situation. Rather than provide closed-ended choices, which risk over-reporting, we opted for an open-ended format. The resulting responses from 483 conserver households (an average of about 4 actions per household) were individually recorded and categorized into nearly 100 conservation behaviors divided into no or low cost, medium cost and high-cost groups. The following table presents an excerpt from the coding scheme. See the Appendices for all open-ended variable codes.

*Table 6. Conservation Action Typology Coding Example*

(109)	<i>Outside home (no or low-cost)</i>
101	Turn swimming pool motor or other irrigation motors off or use less often
102	Turn hot tub off or use less often
103	Water lawn or garden less often
104	Turn off outside lights at night/turn off security
105	Avoid home during peak hours
106	Eat out more often
109	Other
(110-129)	<i>Inside home (no or low-cost)</i>
110	Turn off lights
111	Turn off televisions or watch less often
112	Turning computers and printers off when not in use
113	Turn off other appliances that you are not using
114	Unplug appliance that you are not using
115	Unplug or get rid of the spare refrigerator/freezer
116	Contact local utility for energy audit
117	Use electrical devices less often
118	Use stove or oven less (or use barbeque instead)
119	Use less water (e.g., shorter showers)
120	Not using energy during peak times
121	Use candles
129	Other

These codes were then assigned to each behavior for each case. For the purposes of the present exploratory analysis, two collapsed coding schemes are used: a 19-category variable and a further collapsed 11-category variable. The definitions for the 11-category variables follow.

*Table 7. Reported Behaviors (Dependent Variables)  
Used in the 11-Category Analysis*

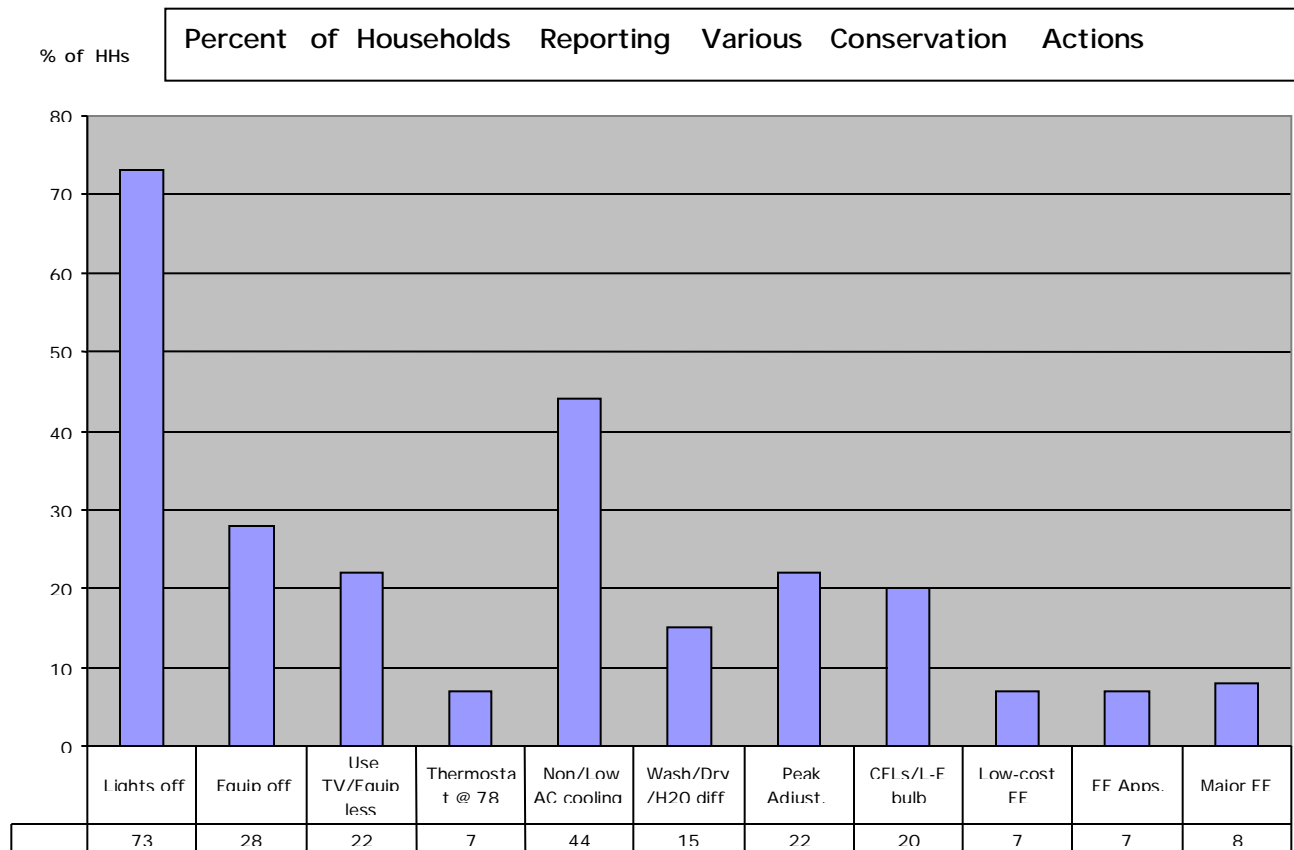
<b>Variable name</b>	<b>Description</b>
Lights	Turn off lights or using fewer lights
TV	Turn off television or watching less television
Equip Off	Turn off equipment when not in use (including less pool & hot tub use)
TST 78	Raised air conditioner thermostat to 78 degrees or above
Non AC	Using the air conditioner less often or not at all
Wash/Dry	Wash or dry clothes or dishes less frequently, using a clothesline instead of the dryer
Peak Adj	Used energy during off-peak hours
CFL blb	Use compact florescent bulbs or other energy saving/low-watt bulb
LC EE	Low cost investments (install fan, plant trees, add awnings, service air conditioner, purchase evaporative cooler, add timers or motion detectors).
EE Apps	Purchase energy-efficient appliances
Maj EE	Major investment (whole house fan, solar panels, added insulation, purchase new or energy-efficient air conditioner).

The distributions of various conservation behaviors for each variable are reported in the two following tables using each of the two category schemes.

*Table 8. Percent of Households Reporting Various  
Conservation Behaviors: 19 Categories*

Category label	Code	Count	Pct of Responses	Pct of Cases
Pool/Tub off	1	38	3.5	8.8
Lights off	2	314	28.5	72.5
TV off/Watch less	3	50	4.5	11.5
Unplug Equipment	4	85	7.7	19.6
Use Equip less	5	47	4.3	10.9
Thermostat @ 78	6	29	2.6	6.7
Little/No AC	7	139	12.6	32.1
Fans Not AC	8	32	2.9	7.4
Shades/Windows	9	20	1.8	4.6
Wash/Dry diff	10	35	3.2	8.1
Clothes Line	11	22	2.0	5.1
Dish Wash diff	12	6	.5	1.4
H2O Heat down	13	2	.2	.5
Peak Adjstmnts	14	97	8.8	22.4
CFLs	15	22	2.0	5.1
Low Energy bulbs	16	66	6.0	15.2
Low Cost EE Equip	17	32	2.9	7.4
EE Appliances	18	31	2.8	7.2
Major EE Investment	19	33	3.0	7.6
		-----	-----	-----
Total responses		1100	100.0	254.0





*Table 9. Percent of Households Reporting Various Conservation Behaviors: 11 Categories*

Category label	Code	Pct of Count	Pct of Responses	Pct of Cases
Lights off	1	314	28.5	72.5
Equip off	2	123	11.2	28.4
Use TV/Equip less	3	97	8.8	22.4
Thermostat @ 78	4	29	2.6	6.7
Non AC cooling	5	191	17.4	44.1
Wash/Dry/H2O different	6	65	5.9	15.0
Peak Adjustments	7	97	8.8	22.4
CFLs/Low Energy bulbs	8	88	8.0	20.3
Low-cost EE Improvements	9	32	2.9	7.4
EE Appliances	10	31	2.8	7.2
Major EE Investments	11	33	3.0	7.6
Total responses		1100	100.0	254.0

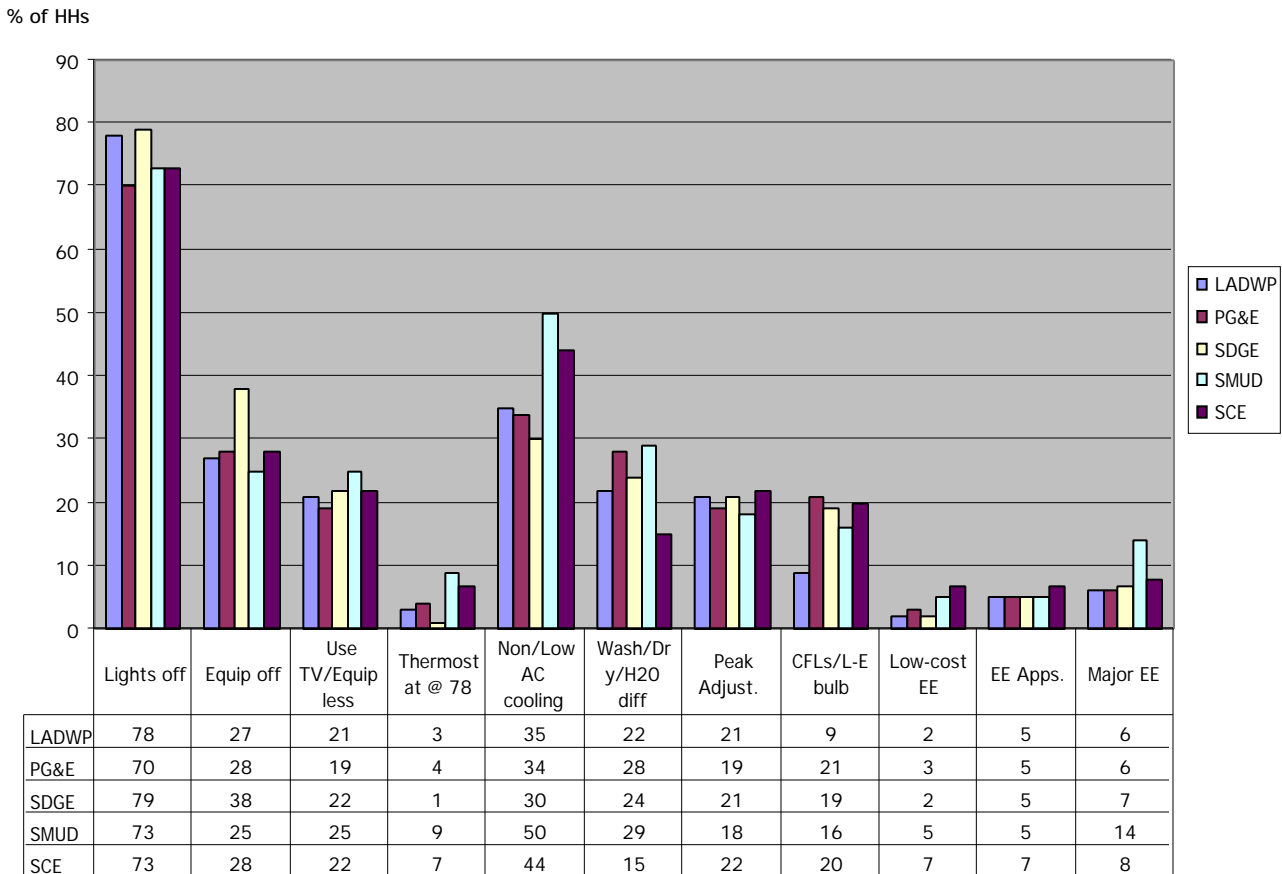
In addition, two figures—histograms of percent of households pursuing each conservation behavior—are also presented. The first is for SCE only. The second adds information about the distributions of reported conservation by the other four major utilities in the state. The 11-category set of variables is used for both of these.

Without stating the obvious, nearly all households (including non-conservers) report turning off indoor and outdoor lights. A large proportion also report using non-AC cooling

strategies. A small proportion report setting their cooling thermostats to 78 degrees or higher (a common marketing message during the crisis). The smallest proportions reported making investments in building, appliances or building systems, although taken together, these hardware installations were non-trivial.

The following figure compares the SCE customer actions with those of other utility customers. By visual inspection, most seem similar, although some stronger conservation

Percent of Households Reporting Various Summer 2001 Conservation Behaviors by Utility Service Territory



efforts among Edison customers can be noted in several areas, and the SMUD profiles seem in some cases to be more like SCE than like the others.

### Segmentation of Conserver Action

An effort was made to explore possible differences between households (e.g., conserver types, socio-demographic types) in their preferences for certain conservation actions (e.g., CFLs vs. non-AC use). A series of multiple response crosstabs of segmentation variables and the conservation behavior variables (coded in an array of 10 variables) were performed. Few of these analyses found significant differences among groups in the resulting tables (e.g., via Chi-square tests), although certain cells seemed to be more strongly associated with particular behaviors.

We then conducted a series of logit analyses, using each of 11 conservation action dummy variables as the dependent variable and an array of socio-demographic predictors as independent variables. The definitions for these socio-demographic variables are found on the next page.

*Table 10. Predictor (Independent) Variables*

<b>Independent Variable</b>	<b>Description</b>
Education	Education in 5 categories (less than High School Degree, High School Degree, Some College, College Degree, Some Graduate School or Graduate Degree.
Income	Income in 15 categories
Race/Ethnicity	Race/Ethnicity coded as a series of dummy codes
White	
Hispanic	
Black	
Asian/Other	
Age	Age in years
Household Composition	Adults and children in household coded as dummies.
Single	
Single with kids	
Couple	
Couple with kids	
Dwelling Type	Type of residence coded as a series of dummy codes.
Single Family	
Multi-Family	
Mobile Home	
Owens home	Dummy coded (1= owns home, 0= rents)
Square Feet	Square feet in home

The results of the logit analyses found some significant effects of certain predictors, *controlling for the simultaneous effects of correlated predictors*. Significant relationships between Lights, TV, Equipment Off, Non AC, Peak Adjustment, CFL Blb, LC Investments, and Major Investments and certain socio-demographic predictors were found in the logistic regressions. No significant relationships were found for TST 78, Wash/Dry, or EE Appliances. The results for the 8 significant models are presented below.

Differences in *Ethnicity* are found in models 1, 2, 5 and 8. African Americans are more likely than whites to report turning off their lights and televisions. Hispanic households are more likely to report shifting electricity use to off-peak hours, when compared to whites. Asians/Other, however, are even less likely than whites to use energy during off-peak hours. Hispanics also are more likely to have reported major efficiency investments than did whites.

Table 11. Logistic Regression Models for Selected Dependent Variables

Independent Variables	Dependent Variables			
	Model 1 Lights	Model 2 TV	Model 3 Eqp Off	Model 4 Non AC
Education	—	—	-.303**	—
Income	—	—	—	—
Ethnicity <sup>1</sup>				
Hispanic	—	—	—	—
Black	1.357*	2.292***	—	—
Asian/Other	—	—	—	—
Age	—	—	—	—
Household Composition <sup>2</sup>				
Single	—	—	—	-.872**
Single with kids	—	—	.838*	—
Couple	-.583*	—	—	-.993**
Dwelling Type <sup>3</sup>				
Multi-Family	—	—	—	—
Mobile Home	—	—	—	1.109*
Owns home	—	—	—	—
Square Feet	—	—	.039*	—
Constant	1.435	-1.737	-1.175	-1.104
Pseudo R <sup>2</sup> (Nagelkerke)	.086	.109	.091	.089
N	317	317	317	317

Independent Variables	Dependent Variables			
	Model 5 Peak Adj	Model 6 CFL blb	Model 7 LCEE	Model 8 Maj EE Inv
Education	—	—	—	—
Income	—	—	—	—
Ethnicity <sup>1</sup>				
Hispanic	1.007**	—	—	1.284*
Black	—	—	—	—
Asian/Other	-1.778*	—	—	—
Age	-.033**	—	-.050**	—
Household Composition <sup>2</sup>				
Single	—	—	—	—
Single with kids	—	—	—	—
Couple	—	—	—	—
Dwelling Type <sup>3</sup>				
Multi-Family	—	—	—	—
Mobile Home	—	1.577**	1.905**	—
Owns home	—	—	—	—
Square Feet	—	.047*	.071*	—
Intercept	-.220	-3.628	-1.051	-5.519
Pseudo R <sup>2</sup>	.124	.081	.185	.090
N	317	317	317	317

\* p < .10; \*\* p < .05; \*\*\* p < .001

<sup>1</sup> For Ethnicity, White is the omitted category.

<sup>2</sup> For Household Composition, Couple with Kids is the omitted category.

<sup>3</sup> For Dwelling Type, Single-Family residence is the omitted category.

Age is significant in both models 5 and 7. As the age increases, respondents are significantly less likely to try to use shift electricity use to off-peak hours or to make low-cost home improvements. Since the effects of income and home ownership were controlled in the models, significantly lower reported levels of low cost improvements in higher age groups cannot be explained by those variables. However, older persons may also have already made many of these low-cost investments.

In models 1, 3 and 7, Household Composition is significant. Couples without children are less likely than couples with children to report turning off lights. Single parents are more likely to turn off equipment than couples with kids, even when controlling for income. In model 7, both singles and couples *without kids* are less likely to turn off or use less air conditioning than couples *with kids*. It is possible that this difference is due to information provided in schools to kids on how to save energy.

Dwelling Type is significant in models 4, 6 and 7. Those residing in mobile homes are more likely to not use or to turn off the air conditioning than those living in single family residences. Similarly, they are more likely to use compact florescent or other energy saving bulbs, and to do low-cost improvements. It is possible that there is a neighboring effect in this case as mobile homes are generally located closer together than many single family homes.

Finally, the Square Footage of a home, added as a control, turns out to be significant in models 3, 6, and 7. As dwelling square footage increases, respondents are more likely to turn off equipment, purchase compact florescent or low-energy bulbs, and do low-cost improvements. Since high square footage can generally be associated with higher energy use, there may have been additional incentives to engage in these behaviors. Income and home ownership were included as control variables. Neither variable was significant in any of the models.

Another approach to segmentation looks for *interactions* between predictors and conservation behaviors that are not specified in the sorts of logit models estimated above. Using a *significant segments analysis* (e.g., using the SPSS CHAID algorithm to test the fit of various hierarchical log-linear models in large cross-classification tables), we are able to reproduce the logit results (hardly surprising), but also to identify several additional consumer segments associated with particular conservation behaviors.

*Table 12. Significant Segment Results:  
Conservation Behaviors and Various Predictors*

(  $p < .05$  )

Significant Segments Analysis for TV

Television (turning off or watching less)	Percent (rounded)
Total Population	15
African Americans	40
African Americans in Single Family Dwellings	56

Significant Segment Analysis for Equip Off

Equip Off (turn off equipment, including pools and hot tubs)	Percent (rounded)
Total Population	20
Single Parents	40

Significant Segment Analysis for Non AC

Air Conditioning (turning off or using less)	Percent (rounded)
Total Population	32
More than a High School Degree	38

Significant Segment Analysis for Wash/Dry

Wash/Dry (washing clothes or drying less often, running full loads in washer and dishwasher)	Percent (rounded)
Total Population	11
Single Family Dwellings or Mobile Homes	13

Significant Segment Analysis for Peak Adj

Peak Adjustment (using electricity during off-peak hours)	Percent (rounded)
Total Population	16
Latino/Hispanic	31
Latino/Hispanic home owner	37

Significant Segment Analysis for CFL

CFL (using compact florescent bulbs or other low energy bulb)	Percent (rounded)
Total Population	16
Single Parents	26
Single Parents in Multi Family or Mobile homes	50

#### Significant Segment Analysis for Low-Cost Investment

LC Investment (install fan, plant trees, add awnings, service air conditioner, purchase evaporative cooler, add timers or motion detectors)	Percent (rounded)
Total Population	5
Mobile Home Dweller	17

#### Significant Segment Analysis for Energy-Efficient Appliances

EE apps (purchase of energy-efficient appliances)	Percent (rounded)
Total Population	5
Home owners	6

#### Significant Segment Analysis for Major Investment

Maj EE (whole house fan, solar panels, added insulation, purchase new or energy-efficient air conditioner)	Percent (rounded)
Total Population	5
Living in home larger than 1125 square feet	7

Here we find unexpected interactions between ethnicity, household composition and housing type and conservation action. African Americans, Hispanics and single parent households are more likely, *in single family homes* and *as homeowners*, to pursue certain actions (e.g., turning off televisions, making peak adjustments, and installing CFLs and other “low energy” lighting).

#### Clusters of Behavior

Since most conserver households report more than one conservation behavior, an exploratory look at whether certain behaviors cluster or “go with” others seemed warranted. While the analysis will perform more complex cluster and principle components analyses in the future, a simple correlation matrix shows that there are some significant associations between conservation actions—i.e., actions that are reported together. It should be noted, however, that all of these correlations are quite low (e.g., in the neighborhood of .10-.20 where the coefficient can range from 0 “no correlation” to 1 “perfect correlation.” The significant correlations are presented in the following table.

*Table 13. Significant Correlations Among Conservation Behaviors*

	Lights	Equip	TV	T @ 78	Non AC	Wash/Dry	Peak Adj	CFLs/bulbs	LC_EE	EE_A pps	Maj_EE
Lights											
Equip	<b>X</b>										
TV	<b>X</b>										
T @ 78	<b>X</b>										
Non AC	<b>X</b>										
W/D/H2O			<b>X</b>								
Peak Ad	<b>X</b>		<b>X</b>		<b>X</b>						
CFLs/bulbs											
LC_EE											
EE_Apps											
Maj_EE									<b>X</b>	<b>X</b>	

x =  $p < .05$

### **Likelihood of Continuing Conservation Behaviors**

For each reported behavior, SCE customers were asked how likely they were to continue that action in the future given the continuation of current conditions. The results are shown in the following table. It suggests that most actions are likely to continue, at least according to person's self estimates—an important area for follow-on research.

*Table 14. Self-Estimated Likelihood of Future Persistence of Reported Conservation Behaviors*

**“Assuming the energy situation stays the same as it is today . . .”**  
(as a percentage of HHs reporting each behavior)

	VERY LIKELY	SOMEWHAT LIKELY	WON'T
Lights off	.82	.14	.03
Equip off	.82	.15	.03
Use TV/equip less	.84	.11	.05
T-stat @ 78	.84	.16	.00
Non AC cooling	.80	.16	.03
Wash/Dry/H2O diff	.81	.19	.01
Peak Adjust.	.79	.18	.03
CFLs/LE bulbs	.81	.16	.03
Low cost EE	.87	.10	.03
EE Apps.	.88	.10	.03
Major EE	.94	.04	.02



As additional measures of persistence of conservation effects, we also asked persons if there was anything that they would be *unwilling to do* to conserve energy, and if their conservation actions to date had been difficult or *inconvenient*. Those results are presented below. Both seem to provide at least some reinforcement for the notion that some level of persistence might be expected—at least persons are not being asked to do terribly onerous or inconvenient things to conserve.

*Table 15. Anything You Would Refuse To Do?*

“Are there things that people are saying you should do to conserve energy, that you would NOT do on a regular basis?” (IWR CLARIFY: “Things such as drying your laundry on a clothes line, or increasing your AC temp.”)

	<i>Frequency</i>	<i>Percent</i>
Yes, please specify	52	20.2
No	206	79.8
Total	258	100.0

*Table 16. Quality of Life Change?*

“Overall, would you say that the things you’ve done to conserve energy have . . . ”

	<i>Frequency</i>	<i>Percent</i>
Significantly decreased your quality of life	11	2.1
Made you somewhat less comfortable	128	24.5
Had no serious effect	307	58.7
Perhaps improved your quality of life	77	14.7
Total	523	100.0

### **Sources of Influence**

For policy purposes, sources of *influence* upon persons’ choices and understandings are important, particularly since many of these are the object of public programs and utility efficiency efforts. We asked SCE consumers what sort things had influenced their conservation actions and choices. The results of that analysis are presented on the following table.

*Table 17. Sources of Influence on Energy Conservation Decisions and Actions*

		Major Influence	Minor Influence	No Influence	Never Use This
Information included in utility bill	N	127	253	187	1
	%	22.4	44.5	32.9	0.2
Things suggested by friends or neighbors	N	54	193	313	8
	%	9.5	34.0	55.1	1.4
Things suggested by co-workers	N	50	151	314	45
	%	8.9	27.0	56.1	8.0
News stories on television	N	252	192	117	6
	%	44.4	33.9	20.6	1.1
Advertisements on television	N	173	209	184	5
	%	30.3	36.6	32.2	0.9
Information from the radio	N	129	197	224	20
	%	22.6	34.6	39.3	3.5
Information from the world-wide web	N	47	139	328	53
	%	8.3	24.5	57.8	9.3
Education programs from a school	N	81	87	352	48
	%	14.3	15.3	62	8.5
Information from community groups	N	68	133	337	31
	%	12.0	23.4	59.2	5.4
Products or rebates related to energy conservation	N	127	199	228	12
	%	22.4	35.2	40.3	2.1
Recommendations from building contractors	N	63	113	361	31
	%	11.1	19.9	63.6	5.5
Your own past experience or common sense	N	472	74	20	1
	%	83.2	13.1	3.5	0.2

There is a considerable amount of policy-relevant information in this table that we will not discuss here. Rather, these findings ought properly be the object of a larger discussion about how to deploy different sources of influence, information, etc., in better targeted ways.

This would assume, however, that the different influences are linked with different socio-demographic and other consumer market segments. Unfortunately, exploratory crosstabulations of the influence variables by conserver type and common demographic (e.g., income, ethnicity, household composition) variable found few significant relationships—only *two*, in fact. These were a slightly higher incidence of use of billing information by the 20%+ conserver group, and (perhaps, ironically) that the greatest credit given to the schools for conservation information was in the group of consumers whose consumption actually *increased* by 20% or more. But, perhaps without the information, they would have consumed even more, and we did observe relationships (noted above) between certain conservation actions and the presence of children in the household.

### **Other Influences on Consumption and Conservation**

The research gathered data on a number of other factors that might reasonably be expected to influence conservation action and consumption levels. These included price effects

(perceived importance), along with qualifying information about how persons actually do (and don't) experience price signals, the effects of blackouts, and conservation programs.

Consumer responses in these areas are reported in the tables below, which show concern about price, less than uniform awareness of cost, a significant exposure to blackouts (with little perceived inconvenience), and relatively little knowledge or participation in conservation or efficiency programs.

*Table 18. Other Influences*

**PRICE CONSCIOUSNESS AND CONCERN**

“How much have electricity PRICE INCREASES had to do with your conservation efforts?”

	<i>Frequency</i>	<i>Percent</i>
A LOT	223	40.5
SOME	149	27.0
OR A LITTLE	141	25.6
<u>none/not conserving</u>	<u>38</u>	<u>6.9</u>
Total	551	100.0

**BILL-PAYING STYLE & ACCESS TO PRICE INFORMATION**

“I am going to read some ways that some people pay their energy bills. Which ONE best describes how you pay your bill?”

	<i>Frequency</i>	<i>Percent</i>
Just pay bill and don't think much about it	140	25.0
Spend time looking at the information on the bill	350	62.4
Don't even see the bill, <u>someone else pays it</u>	<u>71</u>	<u>12.7</u>
Total	561	100.0

**BLACKOUT EXPERIENCES**

“Over the past 6 months, have you experienced any blackouts ordered by the electricity system operators - these don't include blackouts from storms or other local problems?”

	<i>Frequency</i>	<i>Percent</i>
Yes	167	30.0
<u>No</u>	<u>389</u>	<u>70.0</u>
Total	556	100.0

“Which of these statements comes closest to your experience with blackouts?”

	<i>Frequency</i>	<i>Percent</i>
Haven't been inconvenienced	20	12.0
Been a minor inconvenience	114	68.7
Been very inconvenient	32	19.3
Total	166	100.0

#### *AWARENESS OF ENERGY PROGRAM ASSISTANCE*

“Are you aware of any local PROGRAMS to encourage energy conservation?”

	<i>Frequency</i>	<i>Percent</i>
Yes, please specify	143	25.5
No	418	74.5
Total	561	100.0

#### *PROGRAM PARTICIPATION RATES*

*(among those aware of programs)*

“Have you participated in any of these programs in the past year?”

	<i>Frequency</i>	<i>Percent</i>
Yes	54	38.3
No	87	61.7
Total	141	100.0

#### **General Policy Perspectives**

The following tables show that consumers saw a legitimate role for government intervention and programs, however, and that they see “real changes” in California lifestyles as being necessary for long-term energy security.

*Table 19. Policy Perspectives*

#### *GOVERNMENT ROLE*

“Are there other things you would like to see the government do that would encourage or enable you to save energy or be more energy efficient?”

	<i>Frequency</i>	<i>Percent</i>
Yes, please specify	294	57.6
No	216	42.4
Total	510	100.0

*BELIEF IN THE NECESSITY FOR SIGNIFICANT CHANGES  
IN CALIFORNIA ENERGY-USING PRACTICES*

“Overall, which statement comes closer to your view: Californians can retain their lifestyle and the state's energy problems can still be solved, OR Californian's must make real changes in their lifestyle in order for the state's energy problems to be solved?”

	<i>Frequency</i>	<i>Percent</i>
Can maintain lifestyle	202	38.7
<u>Must make real changes</u>	<u>320</u>	<u>61.3</u>
Total	522	100.0

**Future Action Potentials**

Respondents also reported a number of actions that they would like to take to improve the energy efficiency of their homes if they could afford to do so (a major barrier). They also reported a variety of appliances and equipment that they believed were candidates for replacement (see following tables).

*Table 20. Future Possibilities*

*DESIRED ENERGY-RELATED PURCHASES  
OR HOME IMPROVEMENTS*

“Assuming you could do anything you like, are there any energy-related purchases or home improvements you would like to make?”

	<i>Frequency</i>	<i>Percent</i>
Yes, please specify	265	47.4
<u>No</u>	<u>294</u>	<u>52.6</u>
Total	559	100.0

*ARE ANY APPLIANCES CANDIDATES FOR  
REPLACEMENT IN THE NEAR FUTURE?*

	<i>Frequency</i>	<i>Percent</i>
Yes, please specify	171	31.3
<u>No</u>	<u>359</u>	<u>68.7</u>
Total	552	100.0

**Actual Changes in Consumption**

Because have the actual consumption data on SCE sample households for the period from January 1999 through July of 2001 (more recent data are on the way), we are able to explore the question “which conservation measures have the greatest effect on actual changes in consumption?”

Using data from June 2001 and June 2000 (and, again, when data for July-September are available, somewhat different and likely more robust results will be obtained), we constructed an “amount conserved” variable and regressed it on a set of conservation dummies, socio-economic consumer segment variables, building characteristics and controls. The results of the regression—which explains approximately 30% of the variance in observed conservation effect—are presented in the table below.

The R-squared of .30 is actually a quite good fit to data by social science standards, and given the fact that the range of the conservation variable is fairly narrow, it isn’t a bad fit by the standards of conditional demand estimation in residential consumption modeling.

*Table 21. Regression Model of Effects of Conservation Actions, Household Demographics, and Technical/Geographic Factors on Energy Conserved by S.C.E. Residential Consumers, June 2001 vs. June 2000*

	B	Std. Error	t	Sig.
<u>Conservation Actions</u>				
LIGHTS	13.3	22.2	0.60	.55
EQP_OFF	67.0 **	25.1	2.67	.01
TV	10.0	29.8	0.34	.74
TST_78	79.5 *	42.2	1.88	.06
NON_AC	6.6	24.5	0.27	.79
WASH_DRY	-29.7	36.6	-0.81	.42
PEAK_ADJ	-8.3	31.9	-0.26	.79
CFL_BLB	-8.9	27.0	-0.33	.74
LC_EE	-12.1	52.4	-0.23	.82
EE_APPS	3.1	42.7	0.07	.94
MAJ_EE	-20.7	50.0	-0.42	.68
<u>Demographics</u>				
Income (\$000s)	0.4	0.3	1.27	.21
Hispanic	-67.5	45.1	-1.50	.14
Af. Amer.	-111.1 *	60.0	-1.85	.07
White	-27.3	32.6	-0.84	.41
# of Adults	39.3	24.9	1.58	.12
# of Children	-4.9	8.4	-0.58	.56
<u>Bldg/Tech, Location</u>				
w/ Central AC	85.5 **	24.9	3.43	.00
Dwelling Size	0.0	0.0	-0.69	.49
Climate Z_8	-144.9 **	52.3	-2.77	.01
Climate Z_9	-96.9 *	51.3	-1.89	.06
Climate Z_10	-91.4 *	54.7	-1.67	.10
(Constant)	144.4	66.6	2.17	.03

R-squared = .31

\* p < .10 level

\*\* p < .01 level

Conservation variable descriptions in Table 7 above. Omitted categories are: “Asian and other” and Climate Zone 7. Dwelling size measured in square feet.

We can see that only a small number of predictors are significantly non-zero in their effects, although two of these are the *conservation action* variables “unplugging equipment” and “setting thermostat at 78 degrees or above”—both relatively uncommon behaviors. However, in both cases the signs are in the right direction (larger numbers mean *greater conservation*) and the coefficients are fairly large.

Other significant predictors include African American (negative conservation effect) and “central AC” (recall, these would be all central AC-equipped dwellings) and the three climate zone variables. The latter are interpreted as the difference between conservation effect in those zones and the omitted reference category (Zone 7, Northern LA and Southern Central Valley). Both the AC and Climate Zone variables seem to be related to differences in cooling behavior not reported in the “non-AC” and “temp 78” variables, and possibly to real temperature differences between June 2001 and June 2002.

We have collected weather data for SCE stations and have observed only slight differences in cooling degree days between June 2001 and June 2000. However, visual inspection of the daily highs do suggest that there may have been more “heat storm” conditions in the earlier period. Further analysis will be required to try to sort out “weather effects” from “conservation effects” and other effects in the next phases of the research. For now, however, it is sufficient to note that a fairly well-fitting model shows only modest effects of conservation actions on real consumption declines, some ethnic effects that are impossible to interpret (perhaps related to housing quality, etc.), and some fairly clear AC equipment-use and/or temperature effects. Recall, in addition, that we are looking at total monthly kWh energy use, however, and not peak demand changes (which may also be substantial, with significant behavioral influences).

### **Next Stages of Analysis**

The next stages of the research will involve a variety of new analyses using the SCE data. These will include:

- Examining the effects of clusters of conservation actions
- More sophisticated efforts to differentiate customer groups
- Trying to understand likely persistence in greater detail, as well as cumulative effects on consumption and conservation of reported actions during the entire summer and beyond.
- Improving the analysis by supplementation with data from official records on dwelling size, age, etc. that is now missing and incomplete in a small, but significant, proportion of the cases.
- Look closely for blackout, price and media effects.
- Examine possible geographic clustering and neighborhood lifestyle effects.

- Addition of information on weather effects (matching weather station daily high and low data with billing cycles).
- Analysis of the open-ended responses on plans, views, desires, etc.
- More detailed qualitative analysis of the open-ended behavioral Qs (actions, intentions, business-as-usual)

With the addition of billing data from PG&E, SMUD, LADWP, and SDGE, we will be able to conduct identical analyses of customer response in those service territories. More important, we will also be able to conduct *comparative* analysis of conservation action and effect across utilities.

As for future data collection, we intend to fill in the gaps in our knowledge of our respondent base through detailed open-ended interviews about particular actions (e.g., among the highest conserver groups), as well as about success and failure in efforts to make planned conservation/efficiency investments in the coming year. We also plan to continue to collect billing data on these cases through the fall of 2003, and to re-survey them at least one more time in the interim, in order to determine long-term persistence of conservation effect (and additional conservation actions taken), and to see what sorts of follow-through did and didn't take place on planned efficiency investment and appliance replacement during that time. We also intend to examine lagged and longer-term price effects over this period of time.



## APPENDIX A: Survey Instrument

Hello, this is (name), calling for the California Energy Commission about an important study concerning this year's energy situation. The results of this study will help the Commission make decisions about the state's energy policies. I would like to speak to the person living in this household who is 18 years of age or older and who knows the most about your household's energy use. Would that be you or someone else?

- 1 = Yes, Continue
- 2 = No, Not Available - Schedule Callback
- 3 = Refusals (R1, R2, R3, RP, RC)
- 4 = Wrong Number OR Missing Phone Number (WN, MP)
- 5 = Disconnect/Business or Government/Blocked Call (DS,BG,BC,DP,CC)
- 6 = Non Contact (AM, LM, NA, BZ, ED, CC)
- 7 = Communication Barrier (DF, LG, HC)
- 8 = Other Terminates (DD, RN, OT)
- 9 = No one over 18 (IO)

**69:**

**CONFID**

This interview is voluntary. It may be monitored by my supervisor to check my work. However, all of the information you provide will be kept confidential. When the results are finalized, your name will be removed from the data and will not be associated with your answers in any way. If I come to any question you prefer not to answer, just let me know and I'll skip over it.

Continue .....	1	=> /AA0
Schedule callback.....	2	=> /INT06
Refusals by R .....	3	=> /F10

**73:**

**AA0**

Which electrical utility company services your home? {IWR: Please don't read categories.}

Southern California Edison (SCE).....	1	=> /INT14
Pacific Gas and Electric (PG&E).....	2	=> /AA1
Sacramento Municipal Utility District (SMUD).....	3	=> /AA1
Los Angeles Department of Water and Power (LADWP).....	4	=> /AA1
San Diego Gas and Electric (SDG&E).....	5	=> /AA1
Other, please specify .....	6	=> /INT14
Don't know .....	D	=> /INT14
Refused .....	R	=> /INT14

**75:**

**AA1**

Do you rent or own the place where you live?

Rent .....	1	
Own.....	2	=> AA3
Don't know .....	D	
Refuse .....	R	

**76:**

**AA2**

Do you pay for your own electricity separately, or is it included in the rent?

Pay own..... 1  
Included in rent ..... 2  
Other (e.g., landlord bills tenant) ..... 3  
Don't know ..... D  
Refuse ..... R

---

**77:**

**AA3**

What is your zip-code?

Don't know ..... D  
Refused ..... R

---

**78:**

**AA4**

Since the beginning of this year, how much have you been thinking about the effects of the energy situation on you, your family or friends. Would you say...

A LOT ..... 1  
SOME ..... 2  
A LITTLE ..... 3  
NOT AT ALL ..... 4  
Don't know ..... D  
Refuse ..... R

---

**79:**

**B1**

Have you made any changes over the past year in the ways that you use energy?

Yes ..... 1      => B5D  
No ..... 2  
Don't know ..... D  
Refuse ..... R

---

**80:**

**B2**

Which of the following BEST describes why you haven't made any changes.

YOU ARE NOT AWARE OF HOW YOU MIGHT CHANGE YOUR ENERGY USE      1      => B5  
YOU DON'T SEE A REASON TO CHANGE ANYTHING ..... 2      => B5  
YOUR ENERGY USE IS ALREADY LOW ..... 3      => B3  
YOU HAVEN'T CHANGED ANYTHING ENERGY RELATED BECAUSE YOU DON'T PAY THE  
UTILITY BILLS ..... 4      => B5  
OR SOME OTHER REASON ..... 5      => B5  
Don't know ..... D      => B5  
Refuse ..... R      => B5

---

**81:**

**B3**

Next, I am going to read a list of reasons some people have for keeping their energy use low. Which one BEST describes your situation. Would you say . . .

TO KEEP YOUR COSTS DOWN .....	1	=> B4
BECAUSE YOU DON'T WANT TO WASTE ENERGY.....	2	=> B4
BECAUSE OF CONCERNS FOR THE ENVIRONMENT.....	3	=> B4
BECAUSE YOU DON'T SPEND MUCH TIME AT HOME .....	4	=> B5
OR, FOR SOME OTHER REASON.....	5	=> B4
Don't know .....	D	=> B5
Refuse .....	R	=> B5

---

**82:**

**B4**

How long have you been trying to conserve energy?

Press ENTER for Comments .....	1
Don't know .....	D
Refuse .....	R

---

**83:**

**B4A**

What kinds of things do you do to keep your energy usage down?

Press ENTER for Comments .....	1
Don't know .....	D
Refuse .....	R

---

**84:**

**B4B**

Is there anything that could cause your energy use to increase in the future?

Yes .....	1
No.....	2
Don't know .....	D
Refuse .....	R

---

**85:**

**B4C**

BRANCH

---

**86:**

**B5**

Is there anything that could cause you to reduce energy use in the future?

Yes, please specify .....	1
No.....	2
Don't know .....	D
Refuse .....	R

---

**87:**

**B5B**

What would you do under these circumstances to cut your energy use?

Press ENTER for Comments .....	1
Don't know .....	D
Refuse .....	R

---

**88:**  
BRANCH

**B5C**

**89:**

**B5D**

What has been your strongest motivation for doing this?  
Press ENTER for Comments .....1  
Don't know .....D  
Refuse .....R

**90:**

**B6A**

*BEGIN Roster 1*

Can you describe (ANOTHER) ONE of the things you've been doing to conserve energy? {IWR: ENTER ONE PRACTICE PER FIELD EACH TIME THIS QUESTION IS ASKED}

Yes .....1  
No.....2       => ROS2  
Don't know .....D       => ROS2  
Refuse .....R       => ROS2

**91:**

**B6AA**

(Please specify)

**92:**

**B6AB**

*END Roster 1*

{IWR CODE: <B6AA > WAS THIS CONSERVATION ACTION A PURCHASED ITEM?} {EXAMPLES INCLUDE: NEW STORM WINDOWS OR NEW ENERGY EFFICIENT WATER HEATER}

Yes .....1  
No.....2

**95:**

**B6B**

In regards to: <B6AA >. How is this different from what you (used to do / had) before?

Press ENTER for Comments .....1  
Don't know .....D  
Refuse .....R

(In regards to  
<B6AA

>)

@B6D Assuming the energy situation stays the same as it is today, how likely is it that you'll continue to do this in the future? Would you be VERY LIKELY, FAIRLY LIKELY, OR NOT TOO LIKELY?

{IWR Codes are: 1=VERY LIKELY, 2=FAIRLY LIKELY, 3=OR NOT TOO LIKELY,  
D=Don't know, R=Refused}

**98:**

**B8**

All things considered, what is the MOST important thing you've done to conserve energy?

Press ENTER for Comments .....1  
Don't know .....D  
Refuse .....R

---

---

Next I am going to read a list of reasons some people give for using less energy. As I read each one, please tell me how important each one is to you.

@B9A The first one is: TO KEEP YOUR ELECTRICITY BILLS DOWN. Would you say this reason is VERY IMPORTANT, SOMEWHAT IMPORTANT, NOT VERY IMPORTANT, OR NOT IMPORTANT AT ALL.

@B9B The next one is: To qualify for a utility rebate. Would you say this reason is VERY IMPORTANT, SOMEWHAT IMPORTANT, NOT VERY IMPORTANT, OR NOT IMPORTANT AT ALL.

@B9C To do your part to help Californians through a difficult time.

@B9D To try to avoid blackouts.

{IWR Codes are: 1=VERY IMPORTANT, 2=SOMEWHAT IMPORTANT,  
3=NOT VERY IMPORTANT 4= OR NOT IMPORTANT AT ALL,  
D=Don't know, R=Refused}  
(Would you say this reason is VERY IMPORTANT, SOMEWHAT IMPORTANT, NOT VERY IMPORTANT, OR NOT IMPORTANT AT ALL.)

@B9E To use energy resources as wisely as possible.

@B9F To protect the environment.

@B9G To stop energy suppliers from overcharging.

@B9H To see how low you could get your energy bill.

{IWR Codes are: 1=VERY IMPORTANT, 2=SOMEWHAT IMPORTANT,  
3=NOT VERY IMPORTANT 4= OR NOT IMPORTANT AT ALL,  
D=Don't know, R=Refused}

---

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**107:**

**B10**

Overall, do you think that the things you've done to reduce your energy use have...

SIGNIFICANTLY DECREASED THE QUALITY OF YOUR LIFE .....1  
MADE YOU SOMEWHAT LESS COMFORTABLE .....2  
HAD NO SERIOUS EFFECT .....3  
POSSIBLY IMPROVED YOUR QUALITY OF LIFE .....4  
Don't know .....D  
Refuse .....R

---

---

Information about how to conserve energy can come from many different sources. I am going to read a list of sources, and for each one please tell me how much it has influenced your household's energy use.

@D3A The first one is: Information included in your utility bill on HOW to conserve energy. Would you say that it was A MAJOR INFLUENCE, A MINOR INFLUENCE, OR HAD NO INFLUENCE AT ALL?

@D3B The next one is: Things suggested by friends or neighbors. Would you say that it was A MAJOR INFLUENCE, A MINOR INFLUENCE, OR HAD NO INFLUENCE AT ALL?

@D3C Things suggested by co-workers.

@D3D News stories on television.

{IWR Codes are: 1=A MAJOR INFLUENCE, 2=A MINOR INFLUENCE,  
3=HAD NO INFLUENCE AT ALL, 4=Never use this,  
D=Don't know, R=Refused}

---

---

(Would you say that it was A MAJOR INFLUENCE, A MINOR INFLUENCE, OR HAD NO INFLUENCE AT ALL?)

@D3E Advertisements on television.

@D3F Information from the radio.

@D3G Information from the world-wide-web.

@D3H Education programs from a school.

@D3I Information from community groups.

{IWR Codes are: 1=A MAJOR INFLUENCE, 2=A MINOR INFLUENCE,  
3=HAD NO INFLUENCE AT ALL, 4=Never use this,  
D=Don't know, R=Refused}

---

---

(Would you say that it was A MAJOR INFLUENCE, A MINOR INFLUENCE, OR HAD NO INFLUENCE AT ALL?)

@D3J Products or rebates related to energy conservation.

@D3K Recommendations from building contractors.

@D3L Your own past experience or common sense.

{IWR Codes are: 1=A MAJOR INFLUENCE, 2=A MINOR INFLUENCE,  
3=HAD NO INFLUENCE AT ALL, 4=Never use this,  
D=Don't know, R=Refused}

---

---

{IWR Codes are: 1=MORE, 2=ABOUT THE SAME, 3=LESS, D=DON'T KNOW, R=Refused}

Press ENTER for Comments ..... 1  
Don't know ..... D  
Refuse ..... R

Yes, please specify.....	1	
No.....	2	=> FF1
Don't know .....	D	=> FF1
Refuse .....	R	=> FF1

Press ENTER for Comments .....	1
Don't know .....	D
Refuse .....	R

Yes, please specify.....	1
No.....	2
Don't know.....	D
Refuse.....	R

Yes, please specify.....1  
No.....2 => FF6  
Don't know .....D => FF6  
Refuse .....R => FF6

**128:** **FF3**

Have you participated in any of these programs in the past year?

Yes .....	1	=> FF4
No.....	2	=> FF5
Don't know .....	D	=> FF6
Refuse .....	R	=> FF6

---

---

**129:** **FF4**

Which ones?

Press ENTER for Comments .....	1
Don't know .....	D
Refuse .....	R

---

---

**130:** **FF5**

Why not?

Press ENTER for Comments .....	1
Don't know .....	D
Refuse .....	R

---

---

**131:** **FF6**

Are there other things you would like to see the government do that would encourage or enable you to save energy or be more energy efficient?

Yes, please specify .....	1
No.....	2
Don't know .....	D
Refuse .....	R

---

---

**132:** **FF7**

Over the past 6 months, have you experienced any blackouts ordered by the electricity system operators - these don't include blackouts from storms or other local problems?

Yes .....	1	
No.....	2	=> FF9
Don't know .....	D	=> FF9
Refuse .....	R	=> FF9

---

---

**133:** **FF8**

Which of these statements comes closest to your experience with blackouts?

YOU HAVEN'T BEEN INCONVENIENCED AT ALL.....	1
IT'S BEEN A MINOR INCONVENIENCE.....	2
IT'S BEEN VERY INCONVENIENT.....	3
Don't know .....	D
Refuse .....	R

---

---



**134:**

**FF9**

How much have electricity PRICE INCREASES had to do with your conservation efforts? Would you say . . .

A LOT .....1  
SOME .....2  
OR A LITTLE.....3  
not conserving.....4  
none at all.....5  
Don't know .....D  
Refuse .....R

---

**135:**

**FF10**

I am going to read some ways that some people pay their energy bills. Which ONE best describes how you pay your bill?

DO YOU JUST PAY THE BILL AND DON'T THINK ANY MORE ABOUT IT. 1  
DO YOU SPEND TIME LOOKING AT THE INFORMATION ABOUT ENERGY USE AND COSTS. 2  
DO YOU NOT EVEN SEE THE BILL BECAUSE SOMEONE ELSE PAYS IT, OR IT'S PAID DIRECTLY FROM YOUR BANK ACCOUNT. ....3  
Don't know .....D  
Refuse .....R

---

**136:**

**FF11**

Overall, which statement comes closer to your view: Californians can retain their lifestyle and the state's energy problems can still be solved, OR Californian's must make real changes in their lifestyle in order for the state's energy problems to be solved?

can maintain lifestyle .....1  
must make real changes .....2  
Don't know .....D  
Refuse .....R

---

**137:**

**G1**

We're near the end. I'm going to ask you a few questions about your housing and appliances. What kind of dwelling do you live in?

Apartment .....1  
A duplex or triplex .....2  
Townhouse/condo .....3  
Single family house.....4  
A mobile home.....5  
Other (please specify) .....6  
Don't know .....D  
Refuse .....R

---

**138:**

**G2**

Approximately, how long have you lived there? {IWR: PLEASE CODE FROM LIST BELOW. FOR EXAMPLE: IF R SAYS "Since 1975", CODE AS '5' - More than 10 years}

Less than 12 months.....	1
1-2 years.....	2
3-5 years.....	3
More than 5 years.....	4
More than 10 years.....	5
Other, please specify.....	6
Don't know.....	D
Refuse.....	R

**139:**

**G3**

Do you know approximately when your (house/unit) was built? {IWR: If prompt required, "About when would you guess it was built?", If necessary read categories.}"

Before 1900.....	1
Between 1900 and 1939.....	2
Between 1940 and 1959.....	3
Between 1960 and 1980.....	4
Between 1980 and 1990.....	5
After 1990.....	6
Other, specify.....	7
Don't know.....	D
Refuse.....	R

@G4 Do you know approximately how large it is in square feet?  
{IWR: If prompt required, "would you guess...", read categories.

1. Less 500 square feet
2. Between 500 - 749 square feet
3. Between 750 - 999 square feet
4. Between 1000 - 1249 square feet
5. Between 1250 - 1499 square feet
6. Between 1500 - 1749 square feet
7. Between 1750 - 1999 square feet
8. Between 2000 - 2249 square feet
9. Between 2250 - 2499 square feet
10. Between 2500 - 2749 square feet
11. Between 2750 - 2999 square feet
12. More than 3000 square feet
13. Other (please specify)
D. Don't know
R. Refuse

**141:**

**G5**

How energy efficient do you think your house is? Would you say ... {IWR CLARIFY: "This is in terms of heating, cooling, lights and so on."}

VERY EFFICIENT.....	1
ABOUT AVERAGE.....	2
NOT VERY EFFICIENT.....	3
Don't know.....	D
Refuse.....	R

**142:**

**G6**

Does it get much shade in the summer?

Yes .....1  
 No.....2  
 Don't know .....D  
 Refuse .....R

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---

Do you have any of the following appliances or equipment?

@G7A The first one is a GAS FURNACE or HEATER.

@G7B A GAS RANGE and/or OVEN.

@G7C A GAS CLOTHES DRYER.

@G7D A GAS WATER HEATER.

{IWR Codes are: 1=yes, 2=no, D=don't know, R=Refuse}

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Do you have any of the following ELECTRICAL appliances or equipment?

@G8A a CENTRAL AIR CONDITIONER.

@G8B ROOM AIR CONDITIONER.

@G8C EVAPORATIVE COOLER (swamp cooler).

@G8D HOME THEATER or STEREO CENTER.

@G8E HOT TUB.

@G8F SWIMMING POOL.

{IWR Codes are: 1=yes, 2=no, D=don't know, R=Refuse}

---

---

**153:**

**G9**

Are any of your appliances or your heating or air conditioning equipment old enough that you might replace them in the not-too-distant future?

Yes .....1  
 No.....2               => J1  
 Don't know .....D       => J1  
 Refuse .....R           => J1

---

---

**154:****G12**

Which ones?

Dishwasher.....	1
Clothes washer .....	2
Clothes dryer .....	3
Refrigerator .....	4
Freezer.....	5
Central air conditioning .....	6
Home theater/stereo center .....	7
Room or window air conditioner .....	9
Evaporative cooler .....	10
Furnace.....	11
Other, please specify .....	12
Don't know .....	D
Refuse .....	R

**155:****J1**

Finally, I have just a few background questions. Over the past 6 months, how many people, INCLUDING YOURSELF, age 18 or older have lived in your household?

Don't know .....	D
Refuse .....	R

**156:****J1A**

Over the past 6 months, how many children age 17 or younger have lived in your household?

Don't know .....	D
Refuse .....	R

**157:****J1A2***MODULE A: Introduction, HH Roster, and Housing*

Are you...

MARRIED .....	1
DIVORCED.....	2
SEPARATED .....	3
WIDOWED.....	4
LIVING WITH SOMEONE AS IF MARRIED .....	5
OR NEVER MARRIED .....	6
Don't know .....	D
Refused .....	R

**158:****JFILL**

Fill for Spouse/Partner

Spouse/Partner .....	1
.....	0

**159:****J1B**

What was your age on your last birthday?

Don't know .....	D
Refused .....	R

**160:****J1C**

Please tell me which category best describes your age. Is it...

18 TO 29 .....	1
30 TO 39 .....	2
40 TO 55 .....	3
4 56 TO 70 .....	4
70 OR OLDER.....	5
Don't know .....	D
Refuse .....	R

**161:****JSKP1**

BRANCH

**162:****J1D**

Is there any particular person in your household who is especially active in efforts to limit energy use, or is everyone about the same in this regard?

One person .....	1	
All about the same .....	2	=> J1F
Don't know .....	D	=> J1F
Refuse .....	R	=> J1F

**163:****J1E**

(Who is that person?)

Self (The Respondent) .....	1	=> J1F
another adult in the household .....	2	
a child/teen in the household.....	3	
Don't know .....	D	=> J1F
Refused .....	R	=> J1F

**164:****J1E2**

{IWR: IF NECESSARY ASK: "For survey purposes I need to ask if this person is male or female?"}

Male .....	1
Female .....	2
Don't know .....	D
Refuse .....	R

**165:****J1F**

What is the highest level of education you've completed?

No formal education .....	1
Grade school .....	2
Some high school .....	3
Completed high school/GED .....	4
Some college or technical training.....	5
Completed 2-year college degree.....	6
Completed 4-year college degree.....	7
Some graduate work .....	8
A graduate degree .....	9
Don't know .....	D
Refused .....	R

**166:**

**J2**

What is the highest level of education of your spouse or partner?

No formal education .....	1
Grade school .....	2
Some high school .....	3
Completed high school/GED .....	4
Some college or technical training .....	5
Completed 2-year college degree .....	6
Completed 4-year college degree .....	7
Some graduate work .....	8
A graduate degree .....	9
Don't know .....	D
Refused .....	R

What race or ethnicity do you consider yourself? Please indicate if you are Latino or Hispanic. You can include more than one category.

{IWR CODE ALL THE APPLY}

@J3

1. Latino or Hispanic
2. Black or African American
3. American Indian or Alaskan Native
4. Asian
5. Native Hawaiian or Pacific Islander
6. White
7. Or some other race (please specify)
- D. Don't know
- R. Refused

**168:**

**J4A**

Was your total household income for the year 2000, before taxes and other deductions, more than \$50,000 or was it equal to or less than \$50,000?

Less than or equal to 50,000 .....	1	=> J4B
More than 50,000 .....	2	=> J4C
Don't know .....	D	=> J5
Refuse .....	R	=> J5

@J4B Please tell me which income category best describes your total household income for 2000, BEFORE TAXES and other deductions. Stop me when I reach the correct income category.

1. LESS THAN \$10,000
2. MORE THAN \$10,000 UP TO \$15,000
3. MORE THAN \$15,000 UP TO \$20,000
4. MORE THAN \$20,000 UP TO \$25,000
5. MORE THAN \$25,000 UP TO \$30,000
6. MORE THAN \$30,000 UP TO \$35,000
7. MORE THAN \$35,000 UP TO \$40,000
8. OR MORE THAN \$40,000 UP TO \$50,000
- D. Don't know
- R. Refused

@J4C Please tell me which income category best describes your total household income for 2000, BEFORE TAXES and other deductions. Stop me when I reach the correct income category.

1. MORE THAN \$50,000 UP TO \$60,000
2. MORE THAN \$60,000 UP TO \$75,000
3. MORE THAN \$75,000 UP TO \$100,000
4. MORE THAN \$100,000 UP TO \$125,000
5. MORE THAN \$125,000 UP TO \$150,000
6. MORE THAN \$150,000 UP TO \$200,000
7. OR OVER \$200,000
- D. Don't know
- R. Refused

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**171:** **J5**

Can you tell me your occupation?

Press ENTER for Comments .....1  
 Don't know .....D  
 Refuse .....R

---

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**172:** **J6**

And the occupation of your spouse or partner?

Press ENTER for Comments .....1  
 Don't know .....D  
 Refuse .....R

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**173:** **J7**

{IWR IF NECESSARY, READ THE FOLLOWING: "For survey purposes I need to ask you if you are male or female"}

Male .....1  
 Female.....2  
 Refuse .....R

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**174:** **K1**

We may want to contact you again later in the year or next summer to find out if anything has changed. As with this study, your participation is voluntary and any information you provide will be kept confidential. May we contact you again?

Yes .....1  
 No.....2                   => P1  
 Refuse .....R               => P1

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To help us re-contact you, I would like you to please tell me your name, and address. Please remember this information will be kept strictly confidential.

@K2 Press ENTER to Continue {Other codes: D=Don't know, R=Refuse}

Respodent's Name: @RNAME

Address: @ADDR

City: @CITY

Zip: @ZIP

---

**180:**

**K4**

If you would prefer that we contact you using email so that you could answer further questions that way or by completing another short survey at our web site, do you have an email address that you could give me? This information will be kept strictly confidential as well.

Yes .....1  
No.....2  
Don't know .....D  
Refuse .....R

---

**181:**

**P1**

That completes our survey. We appreciate your time and cooperation. Thank you so much for helping us out. Do you have any additional comments or questions about this survey?

Comments .....1  
No Comments .....2

---



## **Appendix B: Codes Derived from Typological Analysis of Open-ended Questions**

### **100-399      CONSERVATION ACTIONS (B6 series, B8, D7, E1, E4)**

#### **100    NO OR LOW-COST BEHAVIORS**

##### *(100-109)      Outside home (no or low-cost)*

- 101    Turn swimming pool motor or other irrigation motors off or use less often
- 102    Turn hot tub off or use less often
- 103    Water lawn or garden less often
- 104    Turn off outside lights at night/turn off security
- 105    Avoid home during peak hours
- 106    Eat out more often
- 109    Other

##### *(110-129)      Inside home (no or low-cost)*

- 110    Turn off lights
- 111    Turn off televisions or watch less often
- 112    Turning computers and printers off when not in use
- 113    Turn off other appliances that you are not using
- 114    Unplug appliance that you are not using
- 115    Unplug or get rid of the spare refrigerator/freezer
- 116    Contact local utility for energy audit
- 117    Use electrical devices less often
- 118    Use stove or oven less (or use barbeque instead)
- 119    Use less water (e.g., shorter showers)
- 120    Not using energy during peak times
- 121    Use candles
- 129    Other

##### *(130-149)      Heating/Cooling (no or low-cost)*

- 130    Draw window shades or curtains during the day
- 131    Turn thermostat to 78 degrees or higher
- 132    Turn thermostat 85 degrees or higher when you are away
- 133    Turn thermostat off when you are away
- 134    Don't use the air conditioner/use less often
- 135    Open windows at night/or early morning
- 136    Use wood stove instead of heating
- 137    Use the furnace less often/turn down thermostat
- 138    Wear more or less clothing
- 139    Don't use fans
- 140    Close off part of home to save on heating and/or cooling expenses
- 149    Other

(150-169)      *Home appliances (no or low-cost)*

- 150    Wash clothes in warm or cold water instead of hot
- 151    Wash clothes less frequently
- 152    Wash larger loads (clothes, dishes)
- 153    Dry clothes on clothes line or drying rack
- 154    Set dryer on auto-dry rather than timed cycle
- 155    Use dryer less often
- 156    Use air-dry cycle on dishwasher/energy saving setting
- 157    Wash dishes by hand instead of dishwasher/or use dishwasher less
- 158    Turn down water heater
- 159    Use appliances (dishwasher, washer/dryer) in the evening/off-peak hours
- 169    Other

200      *MEDIUM-COST BEHAVIORS*

(200-209)      *Heating/Cooling (medium-cost)*

- 200    Ventilate attic
- 201    Install a programmable thermostat
- 202    Use fans instead of air conditioners
- 203    Use window fans at night instead of air conditioners
- 204    Install ceiling fans
- 205    Use swamp cooler/evaporative cooler
- 206    Purchase fans
- 207    Purchase window shades
- 209    Other

(210-219)      *General Home Improvements (medium-cost)*

- 210    Plant shade trees near house
- 211    Add awnings or removable shade cloth
- 212    Install faucet aerators
- 213    Purchase compact fluorescent light-bulbs
- 214    Weather-strip windows and doors
- 215    Replace air conditioner filters/clean air conditioner
- 216    Add motion sensor or timer for lights (inside or outside)
- 217    Put timer on water heater
- 218    Purchase or use low energy/low watt bulbs
- 219    Other

300      *HIGH-COST BEHAVIORS*

(300-319)      *Heating/Cooling (high-cost)*

- 300    Install a whole house fan/attic fan
- 301    Purchase an energy-efficient air-conditioner
- 302    Purchase an energy-efficient furnace or heater
- 303    Purchase a swamp cooler
- 304    Install light-colored shingles

- 305 Install energy-efficient windows
- 306 Purchase air-conditioner (not specified energy-efficient)
- 307 Purchase furnace or heater (not specified energy-efficient)
- 308 Purchase solar panels
- 309 Wind power/windmill
- 310 Dark film coating for windows
- 319 Other

*(320-329) Home Appliances (high-cost)*

- 320 Purchase an energy-efficient range or oven
- 321 Purchase an energy-efficient refrigerator
- 322 Purchase an energy-efficient freezer
- 323 Purchase an energy-efficient washer or dryer
- 324 Purchase an energy-efficient water heater
- 325 Purchase energy-efficient appliance (not specified)
- 326 Purchase new appliance (not specified energy-efficient)
- 327 Purchase gas appliances
- 329 Other

*(330-339) General Home Improvements (high-cost)*

- 330 Add insulation in walls or crawl spaces
- 331 Increase attic insulation
- 332 Seal your ducts
- 333 Wrap water heater with insulation
- 334 Install tankless water heater
- 335 Purchase solar device (lights, pool pump, etc.)
- 336 New roof/white or reflective roof
- 337 Switch to gas or propane
- 339 Other

*(340-349) Other*

- 340 Leaving California
- 341 Be less comfortable
- 342 Use little energy
- 343 Change lifestyle or way of life
- 344 Get off grid
- 345 Change in number of people in household
- 349 Other

**400-499 CONSERVATION / EFFICIENCY PROGRAMS (FF1, FF4, FF5)**

*(400-419) Programs (specific)*

- 400 20/20 program
- 401 Rebate programs through utilities
- 402 Appliance rebates/programs

- 403 Lightbulb rebates/free lightbulbs
- 404 California Conservation Corps
- 405 Energy audits
- 406 Solar panel rebates
- 407 Window programs
- 408 Energy Star program
- 419 Other

*(420-439) Programs (unspecified)*

- 420 Bill flyers
- 421 Don't remember names
- 422 Most programs for businesses not residential
- 423 Incentives for pool owners
- 424 City/local/county programs
- 425 Education programs/public service announcements
- 427 Utility programs
- 428 State programs
- 429 Rebates (not specified)
- 430 Literature in mail/newsletters/information in media (tv, radio, newspapers)
- 439 Other

*(440-459) Not Participating*

- 440 Done what we could/already conserving
- 441 We're already participating
- 442 Don't need new appliances/appliances too new to replace
- 443 To busy to participate
- 444 Too much hassle/lacks motivation
- 445 Didn't qualify
- 446 Not been contacted
- 447 Don't know about them
- 448 Found out about program after it was over
- 449 Not important to us/conservation not important
- 450 Don't need to participate/not necessary
- 451 Not cost effective
- 459 Other

**500-599 ACTIONS, ROLES OF GOVERNMENT / UTILITIES / MEDIA (D7, FF6)**

- 500 Tax credits/financial incentives for alternative sources (solar, wind)
- 501 Rebate programs
- 502 Promote/explore energy-efficient appliances
- 503 Loans for home improvements
- 504 Programs for low-income/senior (home improvement, appliances, etc.)
- 505 Build more power plants/increase supply/increase drilling
- 506 Less dependency on foreign oil
- 507 Explore/promote alternative forms of energy (solar, wind)
- 508 Raise prices or threaten to raise prices

- 509 More government involvement
- 510 Less government involvement
- 511 Get rid of governor/president
- 512 Get rid of top utility officials/employees
- 513 Sanction/punish energy companies
- 514 Support from federal government
- 515 National or state energy conservation standards
- 516 National or state energy efficiency standards
- 517 End deregulation
- 518 Keep deregulation/free market system/private regulation
- 519 Increase media coverage
- 520 Promote nuclear power/build more nuclear power plants
- 521 Don't sell power out of state
- 522 Utilities gouging public/don't trust utilities
- 523 Should lower prices/bills
- 524 Government should conserve/turn off public building lights or street lights/practice what preach
- 525 Business should conserve more/turn off lights when not using them/at night
- 526 Mistrust government
- 527 Variable pricing/time of use pricing
- 599 Other

**600-699        CONSERVATION MOTIVATION, AWARENESS, ATTENTION**  
**(B2, B4B, B5D, B8, D7, FF6)**

*(600-619)        Conservation Motivations*

- 600 The energy crisis/shortage
- 601 To avoid an energy crisis
- 602 Concern about energy running out
- 603 To avoid blackouts or potential blackouts
- 604 To conserve or save energy
- 605 Concern about high bills
- 606 Price or cost increases
- 607 To lower the bill or keep it low
- 608 To save money
- 609 To not be wasteful
- 610 To save or protect the earth
- 611 Doing our part/helping out/being a good citizen
- 612 Influenced by parents/friends/neighbors who conserve
- 613 Needed to replace an appliance
- 614 Rebate or incentive programs
- 615 Media coverage or publicity
- 616 Weather change
- 617 Illness/Medical necessity
- 619 Other

(620-629)      *Conservation Awareness/Attention*

- 620    Keep doing things doing now
- 621    More education/information/make people aware of problem
- 622    Being careful/aware/paying more attention about using energy
- 623    Being conscientious
- 624    Making family members aware of cost of energy
- 625    Making family members aware of the importance of conservation
- 626    More advertising/fliers/newsletters
- 627    Cut back/use less/use only what need

(630-649)      *Not Conserving/No Behavior Changes*

- 630    Don't care/low priority
- 631    Haven't thought about it
- 632    Not much we can do
- 633    No reason
- 634    Want to but haven't
- 635    Bill already low
- 636    Have few appliances
- 637    Always conserved/already conserving/doing what can
- 638    Not home much
- 648
- 649    Other

**700-720            *CONSTRAINTS ON CONSERVATION INVESTMENT (B2, E3)***

(700-709)      *Reasons for inaction*

- 700    Money, finance, cost
- 701    Doesn't own home/lives in apartment
- 702    Time/motivation
- 703    Doesn't need new appliance/or other item/what has now working fine
- 704    Availability of products
- 705    Lacks knowledge/doesn't know about quality of products
- 706    Nothing
- 707    Already doing everything
- 708    Lacks skills to make changes or can't find someone to do them
- 709    Other

**800-899            *MISCELLANEOUS (B4)***

(800-809)      *Time Conserving*

- 800    Less than 1 year/since crisis/since blackouts
- 801    1 to 3 years
- 802    4 to 10 years
- 803    More than 10 years
- 804    Lifetime/always/forever

- 805 Many years/long time
- 807 Since started paying the bills
- 809 Other

**95-99 *MISSING DATA***

- 97 Refused
- 98 Don't know
- 99 Not ascertained